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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/624,038

07/21/2003

Young-Kai Chen

28-19-3-3

6373

7590

11/23/2005

Docket Administrator (Room 3J-219)

Lucent Technologies Inc.

101 Crawfords Corner Road

Holmdel, NJ 07733-3030

EXAMINER

WILSON, ALLAN R

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 11/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/624,038

Applicant(s)

CHEN ET AL.

Examiner

Allan R. Wilson

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 8-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8-20 are rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device.

Regarding claim 8, the portion “wherein either the dielectric sidewall has a thickness of 500 to 1500 angstroms or part of the extrinsic portion of the base layer is located between the substrate and an extrinsic portion of the top one of the layers” (emphasis added) makes it unclear what Applicants intend as the invention.

Claims 9-20 are rejected as being depended on rejected claim 8.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 8 and 12-15 are rejected under 35 USC § 102(b) as being anticipated by U.S.

Patent No. 4,962,053 to Spratt et al. ("Spratt").

Regarding claims 8 and 12, Spratt illustrates in figures 1-17, particularly figure 12, (entire document) a substrate 10 having a top surface;

collector 22, base 54, and emitter 68, 104 semiconductor layers of a bipolar transistor, the semiconductor layers forming a vertical sequence on the substrate in which intrinsic portions of two of the layers are sandwiched between the top surface of the substrate and a remaining top one of the layers,

the base layer comprising an extrinsic portion that laterally encircles a vertical portion of the top one of said semiconductor layers; and

a dielectric sidewall 44, 84 (figs. 9-11) being interposed between the vertical portion of the top one 68 of the layers and the extrinsic portion of the base layer 54: and

wherein part of the extrinsic portion of the base layer 54 is located between the substrate and an extrinsic portion of the top one 68/104 of the layers.

Regarding claim 10, Spratt illustrates in fig. 12 that the extension of the base layer 54 extends farther away from the substrate 10 than an interface between the top layer 68/104 and the base layer.

Regarding claim 11, Spratt illustrates in fig. 12 that one of the two layers 54 that is sandwiched between the substrate 10 and the top layer 68/104 may include doped region formed in the substrate 10.

Regarding claim 12, Spratt illustrates in fig. 12 the part of the extension of the base layer 54 is located between the substrate 10 and the top layer extension 68.

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Regarding claim 13, Spratt illustrates in fig. 12 comprising a dielectric layer 44, a portion of the dielectric layer being located on the extrinsic portion of the base layer 54 and the extrinsic portion of the top one 68/104 of the semiconductor layers being located on the dielectric layer.

Regarding claim 14, Spratt illustrates in fig. 12 the extrinsic portion of the base layer 54 extends farther away from the substrate than an interface between the top one 68/104 of the semiconductor layers and the base layer.

Regarding claim 15, Spratt illustrates in fig. 12 one 54 of the two of the semiconductor layers is a doped region of the substrate.

With regards to claim 16, the examiner had to assume what the product would be by the process claimed. For example, in claim 16 it was assumed that the product was the collector, base or emitter was a semiconductor layer. The claim that it was "epitaxially grown" was not considered to have full patentable weight. A "product by process" claim is directed to the product per se, no matter how actually made, MPEP 2113 "Product-by-Process Claims."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 17 is rejected under 35 USC § 103 (a) as being unpatentable over Spratt as applied to claim 8 above, and further in view of U.S. Patent No. 5,444,003 to Wang et al. ("Wang").

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With regards to claim 17, Spratt is discussed above, it does not show the top one of the semiconductor layers, the emitter, is a graded layer. Wang illustrates in figures 3A and 3B and discloses in col. 7, lines 36-62, the top one of the semiconductor layers, the emitter 22, is a graded layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a graded emitter layer for a "top-down" process that is highly compatible (Wang col. 3, lines 24-32).

Claims 18 and 19 are rejected under 35 USC § 103 (a) as being unpatentable over Spratt as applied to claim 8 above, and further in view of U.S. Patent No. 6,541,346 to Malik. Spratt is discussed above, it does not show the top one of the semiconductor layers, the emitter, is gallium or indium. Malik illustrates in figures 8 and 9 and discloses in col. 2, lines 23-31, the top one of the semiconductor layers, the emitter 51, is aluminum-gallium-arsenide or aluminum-indium-arsenide. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a top gallium or indium emitter layer to reduce the injection of majority carriers from base to emitter (Malik col. 2, lines 31-34).

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

The argument that “the use of ‘or’ terminology is expressly allowed in claims. In particular, M.P.E.P. § 2173.05(h) II states that ‘Alternative expressions using ‘or’ are acceptable, such as ‘wherein R is A, B, C, or D’” is not persuasive. The groups must have something in common. M.P.E.P. § 2173.05(h) I states that:

The materials set forth in the Markush group ordinarily must belong to a recognized physical or chemical class or to an art-recognized class. However, when the Markush group occurs in a claim reciting a process or a combination (not a single compound), it is sufficient if the members of the group are disclosed in the specification to possess at least one property in common which is mainly responsible for their function in the claimed relationship, and it is clear from their very nature or from the prior art that all of them possess this property. While in the past the test for Markush-type claims was applied as liberally as possible, present practice which holds that claims reciting Markush groups are not generic claims (MPEP § 803) may subject the groups to a more stringent test for propriety of the recited members. Where a Markush expression is applied only to a portion of a chemical compound, the propriety of the grouping is determined by a consideration of the compound as a whole, and does not depend on there being a community of properties in the members of the Markush expression (underline added).

This is implied in the expression “wherein R is A, B, C, or D.”

The argument that Imai does not disclose the narrower thickness range is acceptable and that portion of the rejection is withdrawn.

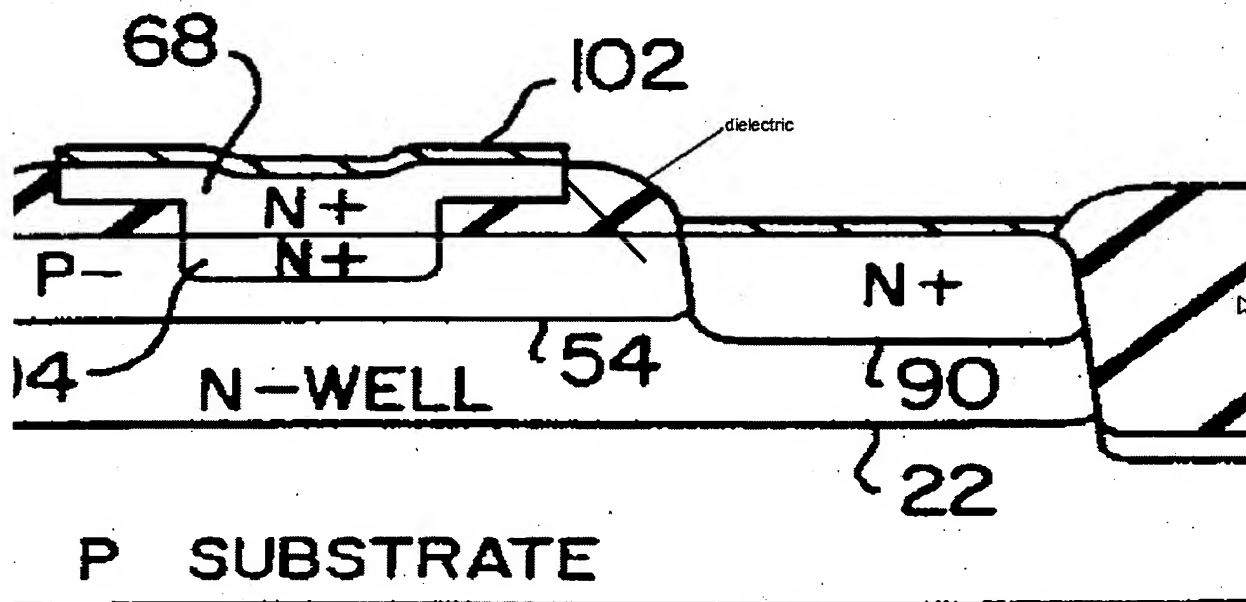
The argument that “Spratt's Figure 12 does not ... show dielectric layers 44, 84 as being interposed between an extrinsic portion of the base layer and a vertical portion of the top layer laterally that is encircled by said extrinsic portion of the base layer” is not persuasive. First the claim states:

a dielectric sidewall being interposed between the vertical portion of the top one of the layers and the extrinsic portion of the base layer; and

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wherein part of the extrinsic portion of the base layer is located between the substrate and an extrinsic portion of the top one of the layers

Spratt in figures 9-12 clearly illustrates a dielectric sidewall 44, 84 being interposed between the vertical portion of the top one 68 of the layers and the extrinsic portion of the base layer 54: and wherein part of the extrinsic portion of the base layer 54 is located between the substrate 10 and an extrinsic portion of the top one 68/104 of the layers. There is dielectric between the vertical end of layer 68 and the extrinsic portion of the base layer 54.



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Any inquiry concerning this communication or earlier communications from an examiner should be directed to Primary Examiner Allan Wilson whose telephone number is (571) 272-1738. Examiner Wilson can normally be reached 7:00-4:00 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allan R. Wilson
Primary Examiner
November 21, 2005